

606.50	Single Steel Pipe Post	Each
606.51	Multiple Mailbox Support	Each
606.55	Guardrail Type 3 - Single Rail	meter [Linear Foot]
606.551	Guardrail Type 3 - Single Rail with Rub Rail	meter [Linear Foot]
606.56	Guardrail Type 3 - Double Rail	meter [Linear Foot]
606.561	Guardrail Type 3 - Double Rail with Rub Rail	meter [Linear Foot]
606.566	Guardrail, Modify Type 3b-Double Rail	meter [Linear Foot]
606.59	Guardrail Type 3 - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.60	Guardrail Type 3 - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.621	Twisted End Section - Guardrail Type 3	Each
606.63	Thrie Beam Rail Beam	meter [Linear Foot]
606.64	Guardrail Thrie Beam - Double Rail	meter [Linear Foot]
606.65	Guardrail Thrie Beam - Single Rail	meter [Linear Foot]
606.66	Terminal End Thrie Beam	Each
606.70	Transition Section - Thrie Beam	Each
606.71	Guardrail Thrie Beam - 4.5 m [15 ft] radius and less	meter [Linear Foot]
606.72	Guardrail Thrie Beam - over 4.5 m [15 ft] radius	meter [Linear Foot]
606.73	Guardrail Thrie Beam - Single Rail Bridge Mounted	meter [Linear Foot]
606.74	Guardrail Type 3 - Single Rail Bridge Mounted	meter [Linear Foot]
606.751	Widen Shoulder for Breakaway Cable Terminal	Each
606.752	Widen Shoulder for Modified Eccentric Loader Terminal	Each
606.753	Widen Shoulder for Low Volume Guardrail End - Type 3	Each
606.754	Widen Shoulder for Guardrail 350 Flared Terminal	Each
606.76	Modified Eccentric Loader Terminal	Each
606.77	Breakaway Cable Terminal	Each
606.78	Low Volume Guardrail End - Type 3	Each
606.79	Guardrail 350 Flared Terminal	Each

## SECTION 607 - FENCES

### 607.01 Description Construct fence and gates.

**607.02 Materials** Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Barbed Wire	710.01
Woven Wire	710.02
Chain Link Fabric	710.03
Cedar Rail Fence	710.05
Fence Posts and Braces	710.06

Bars for barways shall be of eastern hemlock, northern white pine, Norway pine, spruce, cedar, or tamarack, equal in quality to the wood posts. The bark shall be removed and all knots hewn flush.

Metal gates shall be of galvanized steel.

Staples shall be of galvanized or aluminum coated steel.

Concrete for anchoring metal posts, metal braces and wooden gate posts shall meet the requirements of Section 502 - Structural Concrete, except air entraining will not be required. The class of concrete shall be optional.

Drive anchors shall be an approved anchorage consisting of two steel angles driven diagonally into the ground through metal clamps bolted to the post. All parts shall be galvanized.

**607.03 General** The Contractor shall perform clearing and grubbing necessary to construct the fence to the required grade and alignment.

Posts shall be spaced as called for on the plans except that a variation of 600 mm [2 ft] back or ahead on line may be allowed at approved locations. The tops of posts shall be set to the required grade and alignment. Cutting off the posts may be allowed with approval.

Posts for cedar rail fence shall be set plumb in drilled or hand dug holes. After posts are placed, rails installed and the posts aligned, the post holes shall be backfilled. The completed fence shall have the tops of the posts at uniform height above ground following the gradient of the ground.

Posts for woven wire fence and barbed wire fence shall be braced with Type I or Type II bracing at designated location as hereafter specified. Type I bracing shall include diagonal brace and one post of the designated size. Type II bracing shall include two diagonal braces and one post of the designated size.

When the plans require posts or braces to be anchored into the soil, concrete anchors or metal drive anchors shall be used. If concrete is used, temporary guys to hold the posts in position shall be installed until the concrete has set. Unless otherwise permitted, no material shall be installed on posts or strain placed on guys and bracing set in concrete until 48 hours after the concrete has been placed.

If metal drive anchors are used they shall be installed according to the manufacturer's instructions so all parts will be below the ground surface. One drive anchor shall be used on line posts; two drive anchors shall be used on bracing assemblies. Where two drive anchors are used, they shall be placed perpendicular to each other.

Backfill with earth placed in 200 mm [8 in] layers, loose measure, and each layer thoroughly tamped.

Metal posts to be set in solid rock shall be placed in drilled holes and grouted with a cement grout composed of 1 part portland cement and two parts sand mixed with water.

All surplus material and other debris shall be removed and disposed of.

607.04 Woven Wire or Barbed Wire Fencing Wood posts shall be set plumb in holes dug to full depth. Metal posts shall be set plumb by an approved post driver. Posts, which are bent or otherwise damaged, shall be removed and replaced.

a. Bracing At changes in horizontal alignment in excess of 30°, bracing will be required. At changes in horizontal alignment of 15° to 30°, bracing may be called for on the plans or required by the Resident. At changes in horizontal alignment angles of less than 15°, bracing will not be required except at intervals of 200 m [660 ft].

In depressions where tension in the fencing may cause lifting, the post will require bracing.

End, corner, gate, barway, and intermediate posts shall be braced and anchored as shown in the Standard Details.

If metal posts are to be placed in concrete, the concrete shall be allowed to set before the space around the base is backfilled. Backfill with satisfactory material thoroughly tamped. If directed, the Contractor shall place a minimum of 150 mm [6 in] of gravel in the bottom of the post hole.

b. Gates All gates and the bracing assemblies at gates shall be constructed of metal.

c. Barways Barways shall be constructed of posts corresponding to the type of fence posts used. Wood crossbars shall be furnished.

d. Erection of Fabric or Wire Fabric or wire shall be stretched taut. Each strand of barbed wire shall be attached to wood posts with staples. Top and bottom strands of woven wire shall be attached to each post and alternate interior strands of woven wire fencing shall be attached to alternate posts. Staples shall not be driven into line posts to restrict the horizontal movement of wire except at corner posts, end posts and bracing where staples shall be fully driven. When attaching fencing to metal posts, approved stay fasteners shall be used.

Except as otherwise provided, splicing wire will be permitted at posts only with each horizontal strand of wire wrapped completely around the post. The wire strand shall be fastened by winding the wire about the same strand where it leads to the post. This type of fastening shall be used at each end post, corner post, and gate post and at barway posts. Other devices designed specifically to splice fencing wire may be used, subject to approval.

607.05 Chain Link Fence Foundations for posts for chain link fence shall be cast-in-place portland cement concrete placed in approved forms or shall be approved metal drive anchors. If wood forms are used, they shall be removed before backfilling. If fiber forms are used, they need not be removed.

a. Braces Fences less than 1.8 m [6 ft] in height that are installed with a top rail shall not require any brace rails. Fences less than 1.8 m [6 ft] in height installed without a top rail and all fences with heights of 1.8 m [6 ft] or more shall have brace rails installed midway between the top and bottom of the fabric as shown on the plans.

Braces shall be securely fastened to the posts then trussed from the line post to the base of the end, intermediate or corner post with a 10 mm [ $\bullet$  in] diameter truss rod and tightened. At changes in horizontal alignment of less than  $15^\circ$ , bracing will not be required except at intervals of 100 m [330 ft]. At changes in alignment of  $15^\circ$  to  $30^\circ$ , bracing may be required as called for on the plans or requested. At changes in alignment in excess of  $30^\circ$ , bracing will be required. One brace assembly shall be furnished with each end or gate post and two assemblies with each corner or intermediate post and at grade changes specified above.

b. Gates Where gates are required for chain link fence, they shall be constructed of metal.

c. Erection of Chain Link Fabric The grade of fence shall be approximately parallel with the grade of the ground. When directed, abrupt depressions shall be filled.

Top rails when required, shall pass through post caps and be securely fastened to end, corner, brace and gate posts. Joints in top rails shall be made with expansion sleeve couplings. On curves with a radius of less than 150 m [500 ft], the top rail shall be bent to the arc.

The fabric shall be pulled taut, the ends attached to the posts with stretcher bars, and bands or other approved devices. When required, wire fabric shall be joined by weaving a single strand of mesh wire into the ends of the rolls to form a continuous mesh.

d. Tension Wire When called for on the plans, a tension wire of seven gage galvanized wire shall be used in place of the top rail.

607.06 Method of Measurement Fence will be measured by the meter [linear foot] accepted in place. Measurement will be along the gradient of the fence from outside to outside of end posts for each continuous run of fence and shall include fence at bracing assemblies but shall not include space at gates and barways. Gates, barways, and bracing assemblies will be measured by the unit of the size and type specified. Excavation in rock for placement of fence posts in drilled holes will be measured by the cubic meter [cubic yard] determined from the actual depth of the drilled hole in the rock and a hypothetical circle diameter of 600 mm [2 ft].

607.07 Basis of Payment The accepted quantities of fence will be paid for at the contract unit price per meter [linear foot] of the type and size specified complete in place. Barways, gates, and bracing assemblies will be paid for at the contract unit price for each type specified complete in place. Payment shall be full compensation for furnishing and assembling all materials, for excavating and backfilling holes, and for all incidentals necessary to complete the work except that in rock, payment for drilled holes will be made under Pay Item 206.07. Excavation of earth to exposed rock shall be incidental to the several items for erection of the fence.

Payment for bracing assemblies shall include furnishing and installing the various larger size and longer length posts, diagonal bracing, ties, anchors and all incidental hardware necessary to complete the type of assembly required, all as shown in the Standard Details. At gateways, payment will be made for bracing assemblies and there will be no separate payment for the gate posts. All extra costs incurred for furnishing and installing the oversize posts at gateways shall be considered included with the various contract items.

Clearing or removal of trees, stumps or boulders, required to install the fence shall be included in the work of the respective pay items of this section.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
607.08 Woven Wire Fence - Wood Posts	meter [Linear Foot]
607.09 Woven Wire Fence - Metal Posts	meter [Linear Foot]
607.10 Barbed Wire Fence - Wood Posts	meter [Linear Foot]
607.11 Barbed Wire Fence - Metal Posts	meter [Linear Foot]
607.12 Barway - Wood Posts	Each
607.13 Barway - Wood Posts	Each
607.14 Walk Gateway 1.2 m [4 ft] - Metal	Each
607.15 Drive Gateway 4.9 m [16 ft] - Metal	Each
607.16 Chain Link Fence - 1.2 m [4 ft]	meter [Linear Foot]
607.163 Chain Link Fence - 1.2 m [4 ft] - PVC Coated	meter [Linear Foot]
607.165 Chain Link Fence - 1.2 m [4 ft] - without Top Rail	meter [Linear Foot]
607.17 Chain Link Fence - 1.8 m [6 ft]	meter [Linear Foot]
607.173 Chain Link Fence - 1.8 m [6 ft] - PVC Coated	meter [Linear Foot]

607.175	Chain Link Fence - 1.8 m [6 ft] - without Top Rail	meter [Linear Foot]
607.22	Cedar Rail Fence	meter [Linear Foot]
607.23	Chain Link Fence Gate	Each
607.24	Remove and Reset Fence	meter [Linear Foot]
607.25	Remove and Reset Chain Link Fence	meter [Linear Foot]
607.30	Bracing Assembly Type I - Wood Posts	Each
607.31	Bracing Assembly Type II - Wood Posts	Each
607.32	Bracing Assembly Type I - Metal Posts	Each
607.33	Bracing Assembly Type II - Metal Posts	Each
607.34	Bracing Assembly Chain Link Fence	Each
607.35	Bracing Assembly Chain Link Fence - PVC Coated	Each

## SECTION 608 - SIDEWALKS

608.01 Description Construct asphalt, brick paved, or concrete sidewalks.

608.02 Materials Materials shall meet the requirements specified in the following Sections of Division 700 - Materials:

Preformed Expansion Joint Filler	705.01
Welded Steel Wire Fabric	709.02
Brick for Paving	704.02

Portland cement concrete for sidewalks shall be class LP and meet the requirements of Section 502 - Structural Concrete.

Bituminous paved sidewalks shall meet the requirements of Section 403 - Hot Bituminous Pavement.

The new aggregate required to build new sidewalk shall meet the requirements of Standard Specification 703.06(a) Aggregate Base and Subbase, Type B. New aggregate for regrading an existing sidewalk shall meet the requirements of Section 703.10 - Untreated Surface Course and Leveling.

Standard compacting will be required for all areas where 150 mm [6 in] or more new or